

**REMARKS***Examiner Interview*

Applicant respectfully thanks the Examiner for the opportunity to discuss aspects of this case on Thursday July 22, 1999. Applicant notes that the sole substantive issue discussed was the interpretation of the term "adjacent" as used in the claims. The Examiner read the term to include nearby structures rather than structures sharing a common boundary. Applicant suggested, and the Examiner approved, substitution of the term "adjoining" to describe structures sharing a common boundary.

*§ 102 Rejection of Claims*

Claims 11-14, 24, 26 and 28-31 were rejected under 35 U.S.C. § 102(b) as anticipated by Nayak et al. (IEEE Electron Device Letters, Vol. 12, No. 4, April 1991, pp. 154-156). Claims 11, 24, 28 and 30 have been amended to replace the term "adjacent" with "adjoining" as agreed in the Examiner Interview. Applicant respectfully submits that Nayak et al.'s  $\text{Si}_{1-x}\text{Ge}_x$  channel region is not adjoining a gate oxide. Applicant thus respectfully submits that claims 11, 24 and 28 are patentably distinct from the cited reference. As claims 12-14 depend from and further define patentably distinct claim 11, claim 26 depends from and further defines patentably distinct claim 25, claim 29 depends from and further defines patentably distinct claim 28, and claim 31 depends from and further defines patentably distinct claim 30, these claims are also believed to be allowable. Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection under 35 U.S.C. § 102(b), and allowance of claims 11-14, 24, 26 and 28-31.

Claims 30 and 31 were rejected under 35 U.S.C. § 102(b) as anticipated by Sato et al. (U.S. Patent 5,285,088).

Claim 30 is amended to recite a silicon-germanium alloy underneath and adjoining a gate oxide. Applicant respectfully submits that Sato et al. does not teach nor suggest a silicon-germanium alloy underneath and adjoining a gate oxide. If an insulating film were to be formed on the bottom surface of the monosilicon layer 24 as provided in column 8, lines 30-32 in Sato et al., Applicant respectfully submits that it would adjoin n+-type monosilicon layer 21, and not a silicon-germanium alloy. Applicant thus respectfully submits that claim 30 is patentably

distinct from the cited reference. As claim 31 depends from and further defines patentably distinct claim 30, this claim is also believed to be allowable. Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection under 35 U.S.C. § 102(b), and allowance of claims 30 and 31.

Claims 30 and 31 were rejected under 35 U.S.C. § 102(e) as anticipated by Crabbé et al. (U.S. Patent 5,821,577). Applicant maintains its right to swear behind the Crabbé et al. reference as reserved in a prior response.

Claim 30 is amended to recite a silicon-germanium alloy underneath and adjoining a gate oxide. Applicant respectfully submits that Crabbé et al. does not teach nor suggest a silicon-germanium alloy underneath and adjoining a gate oxide. Applicant thus respectfully submits that claim 30 is patentably distinct from the cited reference. As claim 31 depends from and further defines patentably distinct claim 30, this claim is also believed to be allowable. Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection under 35 U.S.C. § 102(e), and allowance of claims 30 and 31.

§§ 102/103 Rejections of Claims

Claims 25, 32 and 37 were rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103 as obvious over Nayak et al. Claim 37 is canceled without prejudice or disclaimer.

The rejection asserts that there is no evidence that the process limitations of the rejected claims preclude Nayak et al.'s cap and setback layers. Applicant respectfully submits that such evidence is demonstrated by Applicant's disclosure. *See, e.g.*, Figures 1B and 1C and accompanying text. However, Applicant has amended claim 25 to more specifically preclude Nayak et al.'s silicon cap layer.

Claim 25 is amended to recite a  $\text{Si}_{1-x}\text{Ge}_x$  channel region, having a germanium molar fraction of  $x$ , and formed in the substrate, underneath a gate oxide and between a source region and a drain region without a silicon layer interposed between the  $\text{Si}_{1-x}\text{Ge}_x$  channel region and the gate oxide. As claim 25 precludes Nayak et al.'s silicon cap layer, Applicant respectfully submits it is patentably distinct from the cited reference. As claim 32 depends from and further

defines patentably distinct claim 30, this claim is also believed to be allowable. Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection in the alternative under 35 U.S.C. § 102(b) or 35 U.S.C. § 103, and allowance of claims 25 and 32.

Claims 32 and 37 were rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103 as obvious over Sato et al. Claim 37 is canceled without prejudice or disclaimer.

As claim 32 depends from and further defines patentably distinct claim 30, this claim is also believed to be allowable. Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection in the alternative under 35 U.S.C. § 102(b) or 35 U.S.C. § 103, and allowance of claim 32.

Claim 37 was rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103 as obvious over Selvakumar et al. (U.S. Patent 5,426,069).

The rejection asserts that there is no evidence that the process limitations of the rejected claims produce a structure inherently different from the structure described by the cited reference. While Applicant respectfully submits that the energy levels recited in claim 37 preclude formation of the structure described in Selvakumar et al., Applicant is not prepared to offer evidence at this time. Applicant thus cancels claim 37 without prejudice or disclaimer.

Claims 32 and 37 were rejected under 35 U.S.C. § 102(e) as anticipated by or, in the alternative, under 35 U.S.C. § 103 as obvious over Crabbé et al. Claim 37 is canceled without prejudice or disclaimer.

As claim 32 depends from and further defines patentably distinct claim 30, this claim is also believed to be allowable. Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection in the alternative under 35 U.S.C. § 102(e) or 35 U.S.C. § 103, and allowance of claim 32.

§ 103 Rejection of Claims

Claims 11-14 and 24-34 were rejected under 35 U.S.C. § 103 as being unpatentable over Solomon et al. (U.S. Patent 5,019,882) together with Wolf ("Silicon Processing for the VLSI Era", Volume 2: Process Integration, 1990; pp. 338 and 355, Table 5.2). Claims 33-34 are canceled without prejudice or disclaimer.

Applicant respectfully submits that Solomon et al. describes a silicon layer interposed between its silicon dioxide layer and its  $\text{Ge}_x\text{Si}_{1-x}$  alloy layer. Solomon et al., column 3, lines 37-54. Applicant further respectfully submits that such a structure is precluded by Applicant's claims 11-14 and 24-32. The secondary reference, Wolf, fails to overcome the deficiencies of the primary reference, Solomon et al. Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection under 35 U.S.C. § 103, and allowance of claims 11-14 and 24-32.

Claim 35 was rejected under 35 U.S.C. § 103 as being unpatentable over Solomon et al. together with Wolf and Nayak et al. Claim 35 is canceled without prejudice or disclaimer.

Claim 36 was rejected under 35 U.S.C. § 103 as being unpatentable over Solomon et al. together with Wolf and Tubbs et al. (U.S. Patent 4,295,897). Claim 36 is canceled without prejudice or disclaimer.

**CONCLUSION**

Claims 11, 24, 25, 28 and 30 are amended herein. Claims 33-37 are canceled hereby.  
Claims 11-14 and 24-32 are pending.

Applicant respectfully submits that the claims are in condition for allowance, and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney (612-371-2103) to facilitate prosecution of this application.

If necessary please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

LEONARD FORBES

By their Representatives,

SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.  
P.O. Box 2938  
Minneapolis, MN 55402  
(612) 373-6913

Date

Aug 11, 99

By

Thomas W. Leffert  
Thomas W. Leffert  
Reg. No. 40,697

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